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AUTHOR McKellar, Nancy A.
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ABSTRACT

An experiment was conducted to determine whether tutoring is a learning activity from which the tutor, as well as the tutee, gains cognitively. Undergraduate students (N=80) participated in the study. Half of the subjects studied selected material to tutor another subject. The other half studied material to prepare for a test that they would take. A selected number of the first group engaged in actual tutoring sessions. Results indicated that, on some types of tasks, the cognitive gains of the tutor are not evident until after the tutoring activity is completed. The mechanisms responsible for cognitive benefits for tutors must be relevant to both the preparation and activity phases of tutoring. A mechanism that may be operative in both phases is organization. Tutors may benefit from mentally organizing the learning material to teach it to someone else. For some tasks, this type of preparation, regardless of whether it is followed by actual tutoring, may be beneficial to the tutor. For tasks more difficult or less familiar to the tutor, the tutoring activity may be necessary before it is beneficial to the tutor. (JD)

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Nancy A. McKellar, Ph.D.
Department of Psychology
Northern Illinois University
DeKalb, Illinois 60015

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LOCUS OF COGNITIVE GAINS FROM TUTORING

There have been anecdotal and research reports that tutoring is a learning activity from which the tutor, as well as the tutee, may gain cognitively (e.g., Cloward, 1967). Allen and Feldman (1972) suggested that the mechanisms responsible for these benefits may be operative either when the tutor prepares to teach or during the actual tutoring activity.

When preparing to teach, tutors may organize the material in such a way that the underlying themes become evident to them (Bargh & Schul, 1980). During the tutoring session, tutors may benefit themselves by elaborating and bringing in new information in the process of teaching the tutees. They also may benefit from the tutees' requests for information, as they are forced to recall information and discriminate relevant ideas in the learning material (McKellar, 1984).

Bargh and Schul (1980) examined the cognitive gains of tutors at these phases in the tutoring process in separate experiments. Only in the experiment involving the preparation phase did those who prepared to tutor perform better than subjects who had equal exposure to the material, but who prepared to be tested themselves. These researchers acknowledged that their results may have been specific to the tasks they used (i.e., answering questions about paragraphs; solving the Tower of Hanoi puzzle).

The reported cognitive gains of tutors in field studies are measured after the tutor has both prepared and tutored. Also, gains from tutoring may be dependent upon how one prepared. For these reasons, the cognitive benefits of tutoring from the preparation and activity phases were examined within a single experiment.

METHOD

Subjects

There were 80 undergraduate students in introductory psychology classes who participated in the experiment for additional course credit. The subjects were randomly assigned to one of four conditions, each of which contained 20 subjects.

Materials

The experimental task involved learning Esperanto, a constructed international language based on the chief European languages. Esperanto: A Complete Grammar by Ivy Kellerman Reed (1968) was the reference for all the materials involving Esperanto (i.e., video-taped lesson, quiz, study guide, tests).

Procedure

All subjects were told that the experiment was intended to examine how people perform on school-related tasks. They watched the 18-minute video-taped Esperanto lesson and were given 5 minutes to complete the quiz.

Next, subjects spent 15 minutes studying Esperanto, using the study guide. They were given one of two reasons to study the material. Half of the subjects were told to study the material in order to tutor another subject on Esperanto who would then be tested. It was explained that the tutee's score was a direct reflection of his/her skill as a tutor and that that score would be available later. The other half of the subjects were told to study the material in order to prepare for a test that they themselves would be taking later. These subjects were told that they would be able to find out their score on the test.

Following this preparation phase, all subjects were given 10 minutes to complete the first test. Subjects who had prepared to tutor were told that

the test was intended as a measure of how well they knew Esperanto before they began tutoring.

During the final phase of the experiment, subjects either tutored a confederate (male graduate psychology student) or studied Esperanto alone. All subjects were given the original study guide plus an additional information sheet to use in their activity during this phase.

The subjects who had prepared to tutor but who were assigned to the study alone activity were told that the student that was to be the tutee had not arrived and that further delay would prevent them from finishing the experiment on schedule. Therefore, they would be given a different task instead of tutoring during the current phase.

The same confederate was used as the tutee for all subjects who tutored. He was introduced as another introductory psychology student who had been told that he would be tutored on Esperanto by the subject and would then take a test at the end of the tutoring session.

Following the 15-minute activity phase, all subjects were given 10 minutes to complete the second test. Before tutors began the test, the confederate was asked to go to a different room to take his test.

Finally, all subjects completed a questionnaire about their prior foreign language instruction.

RESULTS

Performance on the test following the preparation phase was examined in an analysis of variance (ANOVA) of the form, 2(preparation purpose) X (2(question format) X 2(question application)). Those who prepared to tutor ($\underline{M}$ = .59) did not score significantly higher on this first test than those who prepared to be tested themselves ($\underline{M}$ = .57).

The ANOVA used to examine performance on the test following the activity phase was of the form, 2(activity) X 2(preparation phase) X (2(question

format) X 2(question application)). There was a significant interaction of preparation and activity, $F(1, 76) = 4.09$, $p<.05$. Subjects performed better on the final test if they had prepared to tutor and then tutored ($M = .64$) or if they had prepared to be tested themselves and then studied individually ($M = .67$) than if their purpose for preparing and their activity were inconsistent (be tested--tutor, $M = .55$; tutor--study alone, $M = .58$). Additionally, there were significant effects involving the within-subjects factors representing the question types.

Insert Figure 1 about here

DISCUSSION

The results of this experiment indicate that on at least some types of tasks, the cognitive gains of the tutor are not evident until after the tutoring activity is completed. However, these gains are dependent upon one's having prepared to tutor.

Bargh and Schul's (1980) findings suggest that there are other tasks on which cognitive gains accrue after just the preparation phase. These researchers may not have found a significant advantage from the tutoring activity alone because tutors in their second experiment had not prepared for tutoring, or for any other task.

The mechanisms responsible for cognitive benefits for tutors must be relevant to both the preparation and activity phases of tutoring. A mechanism that may be operative in both phases is organization. Tutors may benefit from mentally organizing the learning material in order to teach it to someone else. For some tasks, this type of preparation, regardless of whether it is followed by actual tutoring, may be beneficial to the tutor. For other tasks,

such as those that are more difficult or less familiar to the tutor, the tutoring activity may be necessary for the organizational work done during preparation to come to fruition. During the tutoring activity, the tutee's questions may serve to clarify and refine the organizational framework established by the tutor during preparation. Future research should be designed to examine specific mechanisms, such as organization, that result in cognitive gains for tutors.

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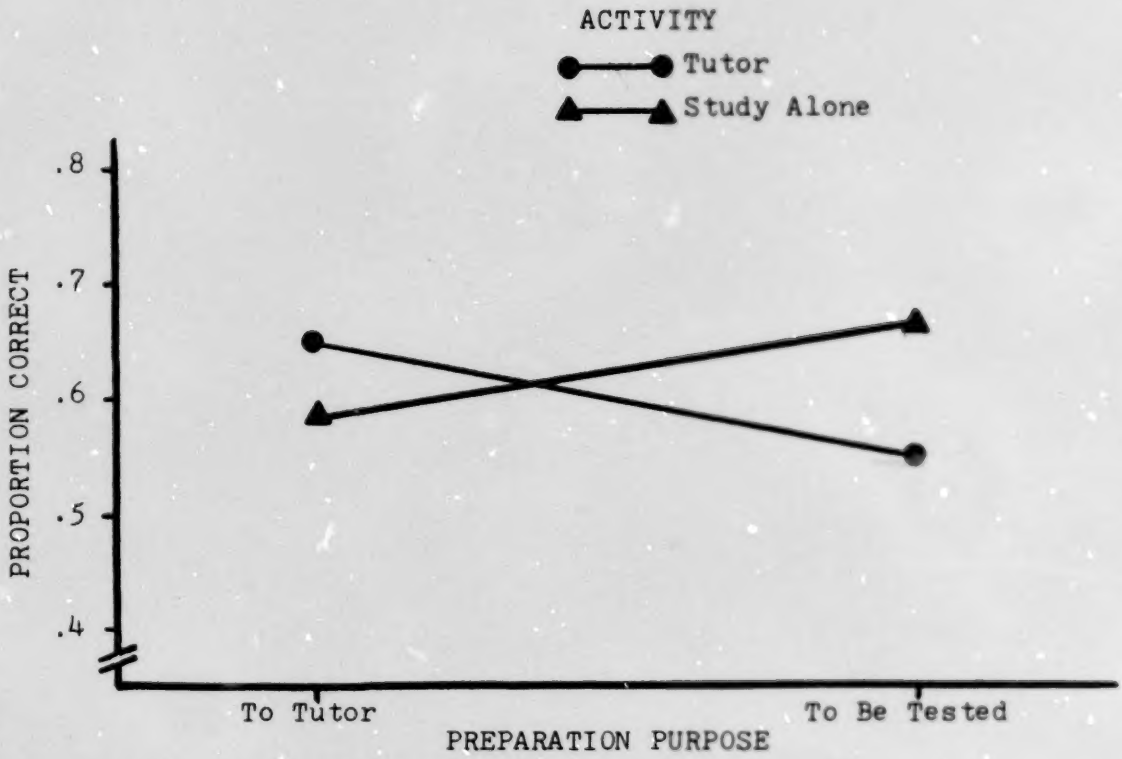

Figure 1. Performance on the final test.